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Crystal Structure of Cs4[{(C6H6)Ru}2Nb6O19]·8MeOH·2H2O. Structural Overview of Hybrid Organometallic Hexametalates of Niobium and Tantalum: Alkali Metal Coordination Behavior

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Abstract

© 2016, Springer Science+Business Media New York.Reaction of Cs8[Nb6O19]·14H2O with [(C6H6)RuCl2]2 leads to the formation of trans-[{(C6H6)Ru}2Nb6O19]4− (1). Evaporation of the reaction solution and extraction into methanol (MeOH) yielded Cs4[{(C6H6)Ru}2Nb6O19]·8MeOH·2H2O (1a) as main product together with a small amount of Cs4[{(C6H6)Ru}2Nb6O19]·4MeOH·6H2O (1b), both characterized by X-ray analysis. These structures complete a set of known organometallic polyoxoniobate or polyoxotantalate complexes [{Cp*M′}xM6O19]n− and [{(C6H6)Ru}xM6O19]n− (M = Nb, Ta; M′ = Rh, Ir; x = 1, 2; n = 6, 4; Cp* = η5-C5(CH3)5) and give additional information about the importance of cation–anion interactions in the crystal structures of such complexes.

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Keywords

Alkali metal coordination, Caesium, Hexaniobate, Methanol, Ruthenium, X-ray structures

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